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Methods of verification of compliance with an asymptotically power law

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Abstract

© Published under licence by IOP Publishing Ltd. This paper describes methods of the power law verification using different empirical data. We do not analyse the value of deviations from the model but try to found out whether these deviations are regular or random. The suggested approach is based on the idea of finding local power approximation of the considered series for each range of ranks, after which one or another trend criterion is applied to the obtained series of local exponents. Application of the runs test is also discussed. The suggested methods were tested using 10 sets of empirical data, which are available for free. It was shown that compliance with the power law is satisfactory only in one case.

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Keywords

power-law distribution, robust criteria, runs test, Zipf's law

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